

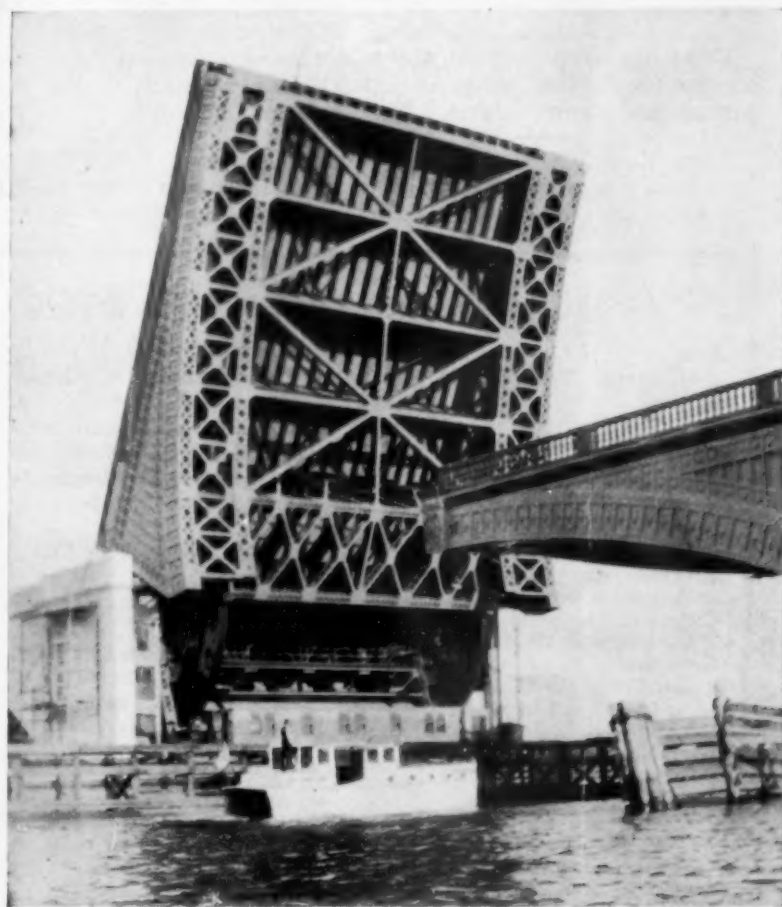
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DEC. 8 1930

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE.



DECEMBER 6, 1930

The Machine Arm of a New National Link

See Page 363

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Summary of Science

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DO YOU KNOW THAT

The old Roman equivalents of butter and sugar were oil and honey.

The largest Spanish speaking city in the world is not in Spain, but in South America: Buenos Aires.

Juvenile court records in one of our largest cities show that no name of a Boy Scout has ever appeared on the court's books.

Iodine occurs not only in the animal and vegetable kingdoms, but also in minerals, in combination with silver, mercury, lead, and zinc.

An artificial chewing gum is a new production.

Of all the silver-fox pelts now sold on the fur markets today, only two per cent. are from wild foxes.

More than 30,000 chimney swifts have been tagged, in an effort to find out where these birds go in winter.

A structural engineer declares that a steel tower a mile high is quite practicable so far as the engineering problem is concerned.

Chicago has a sunlight beacon, made of mirrors, to guide aviators in the daytime.

Vinegar was used with considerable success in the Civil War to help prevent scurvy among soldiers.

A rain of mud fell in Alberta, Canada, for ten hours one day last summer, presumably as a result of a dust storm combined with rain.

Children were often employed in the mines of Rome and other ancient nations, because they could squeeze through tunnels to drag out the heavy sacks of ore.

Hailstones have killed more people in India than in any other country, according to available figures.

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Science Service presents on the radio, an address,

RECORDS OF THE MAYAS

By Dr. Sylvanus G. Morley, Associate in Early History, Carnegie Institution of Washington, and leading authority in Maya and early American archaeology, Friday, December 12, 1930, at 3:45 p. m., Eastern Standard Time

Over Stations of

The Columbia Broadcasting System

ARCHAEOLOGY

Oldest Eskimo Find in Alaska Made by Archaeologist

1500 Years Set as Minimum Age of Settlement and Tree Rings Brought Back for Exact Date Study

BRINGING the good news that he has discovered the remains of an Eskimo settlement so old that it is the oldest evidence of man ever discovered in the Arctic, Henry B. Collins, Jr., archaeologist of the Smithsonian Institution, has just returned to Washington. The prehistoric settlement is at least fifteen hundred years old, Mr. Collins said, and is probably far older than that.

For several years, Mr. Collins and other explorers in Alaska have been finding pieces of fossil ivory carved in a style of art far superior to anything made by modern Eskimos. Archaeologists call this the old Bering Sea art. It has been believed that these things were very old, but to prove it the explorers wanted to find abandoned settlements where such objects were cast away when broken or worn out.

This summer, Mr. Collins, accompanied only by a student aide, James A. Ford of Mississippi College, set out for St. Lawrence Island and there he found a series of five settlements, one abandoned after another. The most recent of these villages was by the present seashore.

The sea gradually receded at this end of the island, Mr. Collins explained. The Eskimos, who always wanted to live close by the sea, kept moving forward to follow the advancing shore line. So, the older the settlement, the farther back from the present seashore it lies.

The Eskimos had a casual way of living on top of their kitchen waste heaps and trash piles. Remains of their wooden house beams and stone floors are still to be found frozen in the mounds that contain their broken tools and weapons and the bones from their meals.

In the latest abandoned village, by the present shore, the expedition found iron-bladed harpoon heads and other materials that the Eskimos acquired only after they met white men. This village was abandoned within the past hundred years. A little way back from the shore was found a mound that represents the next older village. Here the harpoons

were comparatively modern, but there was no trace of the white man's coming. Half a mile back from the shore, was a third village, with ivory objects carved in a more complex and beautiful style.

The fourth village, still farther back, lay at the base of a mountain, and here the carved objects thrown away in the last days of the village were like the objects used in the third village. But the art in the bottom of the mound was of a finer kind, the old carved fossil ivory of the Old Bering Sea culture that the explorers have been finding elsewhere.

Up the side of the mountain, by chance, Mr. Collins found the oldest settlement of all, where the shore line stood many, many centuries ago, and here the art is all of the ancient style. This is the settlement which he pronounces the oldest remains ever found in the Arctic. The timbers are to be sent to Dr. A. E. Douglass, of the University of Arizona, the astronomer who has been so successful in his efforts to date pueblo ruins of the Southwest by a "tree ring calendar." Whether the



HENRY B. COLLINS, JR.

Of the Smithsonian Institution, who has just brought back to Washington the earliest evidence of man ever discovered in the Arctic.

method of determining the date on which ancient timbers were cut can be applied to the Arctic is not yet known, Mr. Collins said. The wood from the region is chiefly driftwood and not very well preserved.

If the tree ring calendar can be fitted to Alaskan Eskimo settlements, however, it will mean that archaeologists will no longer have to say vaguely that prehistoric Eskimos lived "centuries" ago, or "perhaps a thousand years or more" ago.

Science News Letter, December 6, 1930

GEOPHYSICS

Newly Found Submarine Valley Will Guide Ocean Liners

TRANSATLANTIC liners now have a new "landmark" to guide them when approaching the American coast, with the discovery of a previously unknown submarine valley in the Georges Bank. This bank runs eastwards from Cape Cod for about 200 miles and the valley is near its eastern end.

Following the earthquake of November 19, 1929, off Newfoundland, which disrupted cable communication, Captain Bone, of the S. S. Transylvania, made a sounding to check his position, and found a much greater depth than anything expected in the vicinity. At first it was suggested that the rift had sud-

denly appeared as a result of the quake. During recent months the U. S. Coast and Geodetic Survey's survey ship, the *Oceanographer*, formerly J. P. Morgan's yacht, the *Corsair*, has resurveyed the region.

Using the sonic depth finder, which measures ocean depths by the time required for a sound wave to reach the ocean bottom and return as an echo, they found a valley about 8 miles long and 400 fathoms (nearly half a mile) deeper than the surrounding ocean floor. The normal depth in this region is about 100 fathoms.

The survey work was done with the

aid of the radio compass. By this means the position of the ship at all times was accurately checked, and it was found that the valley was more than 500 miles away from the epicenter of the earthquake, and the point where the cable breaks occurred. For this reason it is believed that the valley has nothing to do with the quake; apparently it has been there a long time, but with no careful surveys of the region having been made in the past, its existence was unknown.

Many modern ships, especially the large liners, are equipped with sonic depth finders, so that a sounding can be taken in a few seconds, instead of the much longer time required when a line had to be lowered and hauled in again. For this reason, accurate depth surveys are important. Thus it will now be possible for a navigator, when entering the region of the Georges Bank, to tell his position closely, if he finds a sudden drop below him of 400 fathoms.

Science News Letter, December 6, 1930

ARCHAEOLOGY

Byzantine Relics Found at City of Saul's Disgrace

Building, Possibly Chapel or Villa, Is Dated By Greek Inscription in Mosaic Pavement

BEISAN, the Biblical Bethshan where the body of King Saul was hung up on the wall after he had killed himself in the lost battle of Mt. Gilboa, has now yielded treasures of a much later date to the spades of archaeologists. Gerald Fitz-Gerald, in charge of the Palestine expedition of the University of Pennsylvania Museum, has just reported to Curator Horace H. F. Jayne the discovery of a building of Byzantine date. This represents the period after the fall of Rome, when the seat of the Empire was at Byzantium, modern Constantinople.

The building, believed to be a chapel or a villa, still retains much of the original mosaic pavement of its rooms. There were also found gold jewelry and coins of the Byzantine Empire, as well as articles of bronze, glass and terra cotta of sixth-century Roman date.

In his report to Mr. Jayne, Mr. Fitz-Gerald says:

"Since beginning its work at Beisan this season the expedition has concentrated its efforts chiefly on the excavation of a cemetery, and we have succeeded in excavating about thirty tombs thus far.

"Nearly all of them have proved to be either of Roman or Byzantine date but one tomb we discovered was of a different type, namely a ledge of rock on which lay five of the pottery sarcophagi of the 'slipper' type with the lids representing human heads, which have been associated with the Philistine or other Egyptian mercenaries of about the 12th century B. C.

"These sarcophagi were much broken, but the head of one of them was preserved in good condition. The burials had evidently been looted, but a scarab and some rude figurines as well as some stirrup vases and other remains of sub-Mycenaean pottery were found with them.

"The principal finds in the Roman and Byzantine tombs consist of lamps, glass vases, and small objects of bronze. An extremely graceful figurine is a noteworthy find. Some gold earrings and a large number of carnelian beads were also unearthed."

The discovery of numerous little figures of terra cotta in good condition is regarded as important evidence for the undisturbed state of much of the find. Looted tombs in this region usually had figurines that accompanied the burial pretty thoroughly scattered or destroyed by the treasure-hunting vandals.

"A wholly unexpected discovery," the report continues, "was made of the cemetery slope, when a stone gateway, over three meters wide, was uncovered leading into a room paved with a mosaic floor. On the threshold the mosaic bears a Greek inscription, obviously of the Byzantine period. Beyond the inscription part of a pattern has been uncovered, including figures of birds in square panels, apparently arranged around an octagonal figure.

"The walls surrounding the mosaic figure have been traced, and it proves to extend for over fifteen meters towards



WITNESS OF TOMB'S SECURITY

Figurines like this found undisturbed in graves at Beisan, the Biblical Bethshan where the body of King Saul was hung up on the wall after he had killed himself, show that looters had passed them by.

the north, and nearly ten meters from east to west. Moreover, at the east of it there lie three smaller rooms, all paved with mosaics, beyond which similar paving has appeared, as is also the case on the west side of the big room.

"It is too early as yet to speak with certainty of the nature of this building, for, while the inscription appears suitable to a church or a tomb, the disposition of the room would rather suggest a house or villa. In any event the finding of so large an extent of mosaic paving at this point is a most gratifying surprise."

Science News Letter, December 6, 1930

STATISTICS

1930 Population Found From Figures 20 Years Old

HOW FAST yeast or flies grow may seem to have little relation to the 1930 population figures, but Profs. Raymond Pearl and Lowell J. Reed, of the School of Hygiene and Public Health of the Johns Hopkins University, Baltimore, with a background of extensive and thorough studies of yeast and fly as well as human populations, predicted with great accuracy just how many people Uncle Sam's census enumerators would find in the United States this year.

Ten years ago, using only population data of 1910 and earlier, Profs. Pearl and Reed drew a "logistic curve" of population growth of the United States which predicted that the population in 1930 would be 122.4 millions.

The official census figures were 122.7 millions, which means that the prediction was correct to within only 2.5 parts per thousand. This is probably the most accurate forecast of a population of a large country ever made on the basis solely of data twenty years in advance of the event.

In a statement to *Science*, the official journal of the American Association for the Advancement of Science, Profs. Pearl and Reed explain their "logistic" theory of population growth which has been elaborated by them during the past decade. They have shown that human and other populations have a tendency to grow slowly at first, then rapidly, then slowly again until they become stationary. The curve of growth under given conditions can be expressed as an equation.

In the original forecast, it was suggested that the population of the United States would become stationary at about the year 2100 with a census figure of about 197 millions.

The authors now reaffirm this estimate, which assumes that the earlier growth of the country will be continued according to their law, provided there are no serious or cataclysmic alterations of climatic, geological, biological, economic or social conditions.

Science News Letter, December 6, 1930

CHEMISTRY

Woodworking Plants Become Source of Dust Explosions

Fine Wood Flour Used in Plastics is More Easily Ignited And Produces Higher Pressures Than Some Grain Dusts

WOOD not only burns; it also explodes. The fact that wood dust is one of the most serious sources of dust explosions and that it is more easily ignited than some of the grain dusts which have been the cause of many fatal disasters, is a part of the latest information learned from investigations by dust explosion engineers.

Linoleum, bakelite, dynamite, tooth paste tube tops, and ash trays are largely responsible for the recent increase in the hazard of wood dust explosions. These articles frequently have in their composition quantities of wood flour, which is much finer than saw dust—so fine that it will pass through a 200-mesh screen.

"The finer wood dust is made the greater the danger of explosion from

it," explained Hylton R. Brown, of the U. S. Department of Agriculture, who has made extensive studies of dust explosions. Mr. Brown discussed dust explosions in woodworking industries before the annual meeting of the American Society of Mechanical Engineers in New York this week.

"The first dust explosions occurred in flour mills," he said, "and for many years such explosions were the only ones reported. Now the hazard is recognized in grain elevators, starch factories, sugar refineries, woodworking plants, textile mills, and factories in which rubber dust, sulfur dust, metallic dusts, powdered milk, chocolate and cocoa or other combustible materials in the form of dust are manufactured or handled.

"In the laboratory, tests have shown that wood dust is more easily ignited and produces higher pressures than some of the grain dusts which experience has taught are capable of producing tremendous pressures and completely destroying concrete and steel structures when the proper mixture of dust and air is ignited."

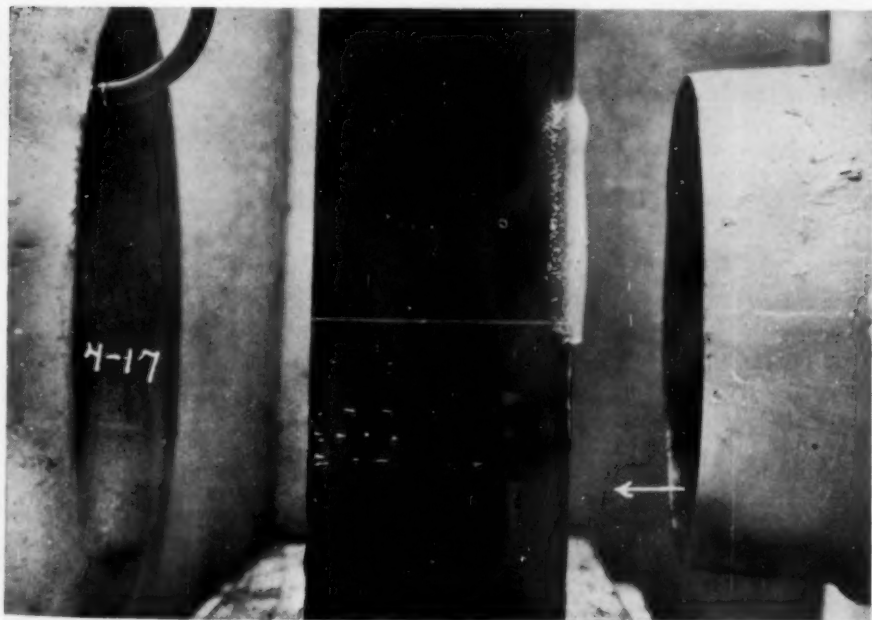
Mr. Brown has measured the force of test explosions caused by the dust of different woods and he finds it difficult to say which wood causes the greatest explosion. From a concentration of two ounces of dust per cubic feet, an explosive force as great as 26 pounds per square inch has been obtained.

"If any comparison can be drawn," he said, "it is that softwoods as a rule produce higher pressures than hardwoods when the concentration is low, but as the concentration increases the pressures increase more rapidly for hardwood than for softwood."

Cleanliness, elimination of sources of ignition and prevention of static electricity were suggested as safety measures.

Science News Letter, December 6, 1930

Forty carloads of quick-frozen 1930 Georgia peaches are now being distributed in large cities.



AIR SPEED, 70 MILES PER HOUR

Temperature, 24.8 degrees Fahrenheit, in the refrigerated wind tunnel of the Langley Memorial Aeronautical Laboratory, Langley Field, Va. Ice, which often brings unexpected disaster to aviators, has formed on the untreated upper half of the model wing while the lower half is protected from ice formation by a coating of "Karo" syrup. Engineers working under the auspices of the National Advisory Committee for Aeronautics have found such soluble compounds as corn syrup helpful in preventing the formation of ice on airplane wings.

ASTRONOMY

Yardstick of the Solar System

By JAMES STOKLEY

Astronomers Are Busy Photographing Eros, The Tiny Planet, Now on Its Nearest Approach to The Earth

DURING the year that is now closing the solar system has gotten somewhat more than its normal share of astronomical attention. The discovery of a new major planet was an event that had happened only twice before in astronomical history, and so, when Pluto was found by the Lowell Observatory in Arizona, the year 1930 promptly went down as an important one. In the last few months, Pluto has again come into view, after disappearing in the glare of the sun during the summer. It is traveling close to the path that was calculated for it last spring, after photographs made of it as early as 1919 had been found. These gave observations sufficiently widely separated in time to make an accurate orbit possible. Despite some questions at first by a few skeptics, Pluto has now taken its place as a respectable, though rather small, member of the solar system.

But even if Pluto is smaller than the earth, which is probably the case, it is still larger than any of the asteroids—the tiny planets that revolve in orbits mostly between the paths of Jupiter and Mars. More than a thousand are known, but most are of little importance. To be sure, they must be observed and track must be kept of them. Even so, one occasionally gets lost, and then may turn up again as a new discovery.

Just now, however, one asteroid is coming in for much more than its usual share of attention. This is Eros, a tiny object probably about fifteen miles in diameter, as compared with 8000 miles for the diameter of the earth and 2000 for the moon. But this winter Eros will come within 16,200,000 miles of the earth, closer than any permanent celestial object except the moon, and about a fifth of the distance of the sun. Then it will help astronomers tell how far the sun is from the earth, and how many tons of material is contained in the earth and the moon.

It is fairly easy to tell the relative distances in the solar system, to find, for example, that Jupiter is 5.203 times as far from the sun as the earth, or that

Mercury is only .387 times as far. But to tell these distances in miles is a different matter. However, if one distance in the solar system can be obtained with precision, then, the proportions being known, the rest can be calculated.

The fundamental method of measuring actual, rather than relative, distance, is by what is known as parallax. Think of the moon when it is full, then it is directly opposite the sun. The sun is setting, and the moon rising, in Washington, so in Singapore, on the opposite side of the earth, it is now sunrise and moonset. Two astronomers, one in Washington and another in Singapore, photograph the moon through their telescopes, and determine its position among the stars. But the two astronomers are on opposite sides of the earth, so they are separated by nearly 8000 miles, the earth's diameter.

Finding the Moon's Parallax

The moon is about 240,000 miles from the earth, so if you could draw a triangle between the two observers and the center of the moon, its sides would be about 240,000 miles long, and the base 8000 miles. The angle at the tip would be about two degrees, or about four times the moon's apparent diameter in the sky. The stars beyond are practically at infinite distance, and so if the two astronomers took their photographs of the moon at the same instant and then compared them, they would find that in each, the moon obscured different stars. The photograph made at Singapore would show the moon displaced among the stars about four times its own diameter to the west from its position in the Washington plates. Of course the same thing would be true of photographs made at either one of the cities 12 hours apart, for then the earth would have turned the place from one position to another 8,000 miles away. But then, the motion of the moon among the stars would introduce another displacement, which would have to be considered.

Now suppose two such photographs are made, and on them we measure the displacement, which gives us the angle at the vertex of the long triangle to the moon. We know the diameter of the earth, so we can figure out the length of the sides of the triangle. They come out around 240,000 miles, so in this way the distance of the moon can be determined. The greater the displacement, the closer the object measured. The moon is so close, and the displacement, or parallax, as it is called, is so large that the measurement is easy. But the moon is so closely associated with the earth that it is necessary to measure the distance of one of the planets, or the sun. These are much farther away, the parallax is much smaller. The brilliance of the sun and its size make accurate measurements of it rather troublesome. Even a planet like Mars presents difficulties.

Now that Eros is coming close, it provides a convenient object to measure. It approaches so close that its parallax is fairly large, and it is so small that even then it appears as a star-like point of light. Incidentally, it is the fact that these objects appear as mere points of light that has given them their name, for "asteroid" is simply the Latin for "star-like." This name was suggested by the famous English astronomer, Sir William Herschel.

Because of its star-like character, photographs of Eros among the stars can be measured with great accuracy. Eye observations through telescopes to determine its position are also easy. Therefore astronomers throughout the world are now busily engaged in photographing it and measuring it, in almost every conceivable manner. No doubt many of these measurements are unnecessary, but it will be many, many years before it again comes as close. Therefore the astronomers are not taking any chances, but are doing everything they can with it.

After next spring, when the planet has passed from view, the work on these observations will commence. Then its parallax can be determined with high accuracy, and with this definite measuring rod, the other distances in the solar systems can be measured more precisely. And since it is the distance

from the earth to the sun that provides the base line for the minute parallaxes of the stars, their measurements also will be made more accurate.

Besides the distance of the members of the solar system, Eros will also help tell us the mass, or number of tons of material, in the earth and moon. The path of Eros is calculated, as it would move in space if our planet and satellite were not present. But Eros comes so close that the gravitational attraction of the earth and moon pull it out of its normal path, and from the amount of this deviation the mass of the earth-moon system can be found. With the moon constantly moving around the earth, the relative positions of the three bodies change, and the mass of the moon alone can be found. The difference is the mass of the earth.

Asteroids Filled Gap

In addition to all this, Eros is of interest in itself. Though many of the asteroids are of little importance, Eros, which marks the limits of the system, is important, and from its study we can doubtless learn much about these little planets.

The discovery of the asteroids and their subsequent history is a fascinating one. In the seventeenth century, Johann Kepler noticed that the gap between Mars and Jupiter was larger than between any of the other planets then known. Then, in 1772, what is now known as Bode's law was enunciated, giving the approximate relations between the distances of the planets. This also indicated that there was a missing planet between Mars and Jupiter. Nine years later, Herschel discovered the planet Uranus, and its distance corresponded so closely to Bode's law that it seemed more certain than ever that there was a missing planet.

On the opening night of the nineteenth century, January 1, 1801, the Italian astronomer Giuseppe Piazzi was at work in his observatory in Sicily. He noticed what seemed to be a star in a place where he knew there had been no stars a few days before. He observed the strange "star" for several days, and each night it had moved a little, so it was obviously a planet. In honor of the tutelary goddess of Sicily he named it Ceres, and continued to observe it for several weeks, when he was taken ill. Upon his recovery, the planet had disappeared in the glare of the sun, and was apparently lost, for he did not have enough observations of it to calculate its path by the methods then in use. The German mathematical astronomer,

Karl Friedrich Gauss, came to the rescue, and proceeded to invent a method of finding the orbit from only three observations, and with the method he calculated the path of Ceres. As a result the planet was picked up again in the autumn of 1801, and has never been lost since. Several other asteroids were discovered in the next few years. In recent years the photographic telescope has been used to search for them and now about 1,500 are known. Therefore it has been something of a problem to name them. The mythology of all nations has been exhausted, and cities, universities, lady friends, pets, and even favorite desserts have been perpetuated as asteroids.

Eros was discovered, in August 1898, by an astronomer named Witt, in Berlin. When its orbit was calculated it was found that sometimes it is as far as 165,630,000 miles from the earth, but at one place its orbit comes within 13,840,000 miles of the orbit of the earth, about half the least distance of Venus from us. This is the part of the earth's orbit that we occupy about January 22. The asteroid revolves around the sun once in $643\frac{1}{4}$ days, nearly $1\frac{3}{4}$ years, but the earth itself is moving also. Therefore, every 845 days, about $2\frac{1}{3}$ years, Eros and the earth are the same direction from the sun, or in opposition. Mostly this happens at some time of the year other than January 22, but once in a long interval it occurs near this date, and then the earth and the asteroid are very close. Unfortunately, one of the

closest oppositions occurred in 1894, before it was discovered. In 1901, it came within 30,000,000 miles, and was then widely observed, but this year it is even closer. At the end of January it will be only 16,200,000 miles from us.

Invisible to Naked Eye

Even when brightest, Eros is a little too faint to be seen with the naked eye. Only one asteroid, Vesta, the fourth to be discovered, ever becomes bright enough to be seen without some telescopic aid. The accompanying diagram shows the path of Eros during December, January and February. The numbers in parentheses under the dates give the magnitudes. Now it is getting into the constellation of Leo Minor, the lesser lion, which is overhead at this time of year about 4.30 A. M. Then it will move into the neighboring constellation of Leo, the lion, passing close to the familiar sickle. At the end of January it reaches the rather faint group of Sextans, the sextant, and then passes down into the more southerly constellations, so that it will be out of sight of northern observatories, but well placed for the great telescopes in South Africa. When brightest, it will be visible with such slight optical aid as a good pair of binoculars, but even then it will be hard to find unless you know exactly where to look for it, and even when you see it, it will not be more exciting than a faint star.

Though Eros will not come into naked-eye promi- (Turn to page 364)



THE PATH OF EROS DURING THE COMING MONTHS

Eros, the most important of 1500 asteroids, will soon be only 16,200,000 miles from the earth, ready to check the distance to the sun and to tell the mass of the earth and the moon.

CHEMICAL TECHNOLOGY

Research Finds New Ways Of Finishing Wood

BETTER finishing processes which will make wood more beautiful and preserve it longer were described by James W. Lawrie, director of chemical research for the A. O. Smith Corp., of Milwaukee, Wis., before members of the American Society of Mechanical Engineers at their annual meeting in New York this week. Mr. Lawrie was discussing research problems of the woodworking industry.

It has already been learned, he said, that present methods of sanding, staining, filling, varnishing, etc., are at least theoretically incorrect. A method was explained by which floors are curried instead of sanded and the "whiskers" shaved off. Filler is then applied under pressure. When floors finished this way were tested with a walking machine, it was found that after receiving 1,500,000 artificial steps they were in as good condition as ordinary floors given only 250,000 steps.

Another accomplishment of wood research, Mr. Lawrie pointed out, is the finding by Dr. George L. Clark of the University of Illinois that the swelling of wood by water is not a chemical but a physical change. It had been thought that swelling might be caused by chemical union of the cellulose with water, but Dr. Clark showed that water merely penetrates between the cellulose crystals and pushes them apart by capillary force.

Preventing wood decay and making wood fire resistant without destroying its strength were also mentioned as problems.

A new laboratory working in this field is that of the National Lumber Manufacturers' Association in Washington, Mr. Lawrie said.

Science News Letter, December 6, 1930

ASTRONOMY

Comet is Rediscovered By Japanese Astronomer

NAKAMURA'S comet, which gets its name from the astronomer at the Kwasan Observatory of the Kyoto Imperial University in Japan who discovered it, has just been rediscovered at the same observatory by an astronomer named Sibata. The Central Astronomical Bureau of the International Astronomical Union at Copenhagen, Denmark, has just received notification

that the comet was picked up again on November 13. Then it was in the constellation of Taurus, the Bull, high in the eastern evening sky, and characterized by the red star Aldebaran. The comet was just to the south of the Pleiades, and was slowly moving to the west.

Dr. Nakamura found the comet originally in 1922. Calculations of its orbit, made by Dr. Issei Yamamoto, director of the Kwasan Observatory, indicate that it was at perihelion, that is, the position closest to the sun, on October 21. Therefore, it is now receding from the sun, and will become fainter. On the date of discovery it was of the thirteenth magnitude, too faint to be seen except with a moderately large telescope. Astronomically, its position at discovery was 3 hours, 40 minutes, 41.5 seconds right ascension and 18 degrees 53 minutes 25 seconds north declination.

Science News Letter, December 6, 1930

ACCIDENT PREVENTION

Engineering Revision Seen As Accident Preventive

EDUCATIONAL campaigns in safety, startling posters and the like have their place in preventing accidents, but there is another form of accident prevention which has already greatly reduced accidents and still has limitless possibilities. It is engineering revision.

By engineering revision is meant buildings designed for health and comfort, well arranged transportation facilities, ready and safe access to every place workers are required to go, adequate and well-arranged lighting and the safeguarding of machinery, Lucian W. Chaney, expert in accident prevention of the U. S. Bureau of Labor Statistics, told members of the American Society of Mechanical Engineers at their annual meeting in New York this week.

Mr. Chaney found that in a special study of accidents causing 372 deaths, 212, or 57 per cent, could have been prevented by some form of engineering revision.

"This can be said without qualification," he declared. "It cannot be said, however, that all the other 43 per cent would have been amenable to educational methods in response to which caution would insure safety. In only about 10 per cent of these deaths would it be safe to say positively that the man's own carelessness clearly appears as the major factor."

Science News Letter, December 6, 1930

IN SCIENCE

ARCHAEOLOGY

Old Temples Stood on Ruins Of Still Earlier Temples

ROMAN temples standing on the foundations of temples of pre-Roman days, just as Christian churches have frequently been found to rest on the ruins of pre-Christian temples, have been excavated in the great temple district of Trier, Germany. This area, a kind of trans-Alpine Acropolis, was discovered only recently, but has already yielded more than sixty temples to the explorations conducted by the Provincial Museum. The temples were built by Romanized Teutons and Celts to half-Romanized gods whom they had worshipped before Trier was founded by the Emperor Augustus. It was natural therefore that their new stone temples should follow the architectural lines of the old, pre-Roman wooden ones.

Science News Letter, December 6, 1930

ELECTRICITY

Electric Power Tie-ups Will Soon Cross Mississippi

ELECTRIC power transmission systems of the eastern part of the United States are so interconnected that the principal systems east of the Mississippi river may now interchange power.

"This territory comprises an area of approximately 900,000 square miles, about twice the size of Germany, France and England combined," B. F. Wood, president of Allied Engineers, Inc., of New York, told members of the American Society of Mechanical Engineers at their annual meeting in New York this week.

"Within a relatively short time," Mr. Wood declared, "interconnecting links will be extended to include other power systems west of the Mississippi, making the area of the then connected systems in excess of 1,500,000 square miles, in which there is a population of approximately 98,000,000."

Science News Letter, December 6, 1930

NE FIELDS

MEDICINE

Advises Delay in Test Of Paternity by Blood

BLOOD group tests to determine a child's paternity should not be made until at least two weeks after birth, Dr. Carl H. Smith of Cornell University Medical College advises in a note to the American Medical Association.

Dr. Smith has found from a study of blood groupings that for the first ten days or so the infant's blood group is influenced by the direct transmission before birth of some of the mother's blood. After that period, the child's own blood group becomes fully established and a fair, reliable test can be made.

Science News Letter, December 6, 1930

PHYSICS

Violin Bows May Be Made Of Silver Threads

VIOLIN bows, which have been strung with horsehair ever since the Middle Ages at least, may soon have to yield place to a new form of an old material. A German violinist has been experimenting with bows strung with silver wires of hair-like fineness, slightly roughened on their surfaces to set the violin strings vibrating.

It is stated that a sensitiveness and brilliance of tone are achieved that excel the effects usually obtained with the old horsehair bows.

Science News Letter, December 6, 1930

SOCIOLOGY

Young Workers Get Sick Oftener Than Older Ones

THE YOUNG industrial worker is more apt to get sick than the older employee, a study just reported by the Milbank Fund has shown. On the whole, workers in industry are healthier than the general population. The statistical analysis of the study was made for the Fund by Dean K. Brundage of the U. S. Public Health Service.

The fact that the older employees are

healthier than the younger ones and likewise healthier than men and women of the same age groups outside of industry can probably be explained on the grounds that the healthier individuals tend to remain in industry to a greater extent than the sickly. Industrial workers appear, in the main, to be the flower of the general population in physique and constitution.

Women workers tend to be absent because of illness from 50 to 100 per cent more often than men, especially for short periods. Married women were absent from work much more than single women.

Science News Letter, December 6, 1930

ARCHAEOLOGY

New Theory Explaining King Solomon's Mines

THE OLD romantic legends that link King Solomon's Mines with the mysterious ruins of Zimbabwe, in South Africa, have been sharply demolished by the conclusions of Miss Gertrude Caton-Thompson, British archaeologist. In place of the legends, we are now asked to believe stranger things.

Instead of an ancient Semitic colony building the stone walls of Zimbabwe, Miss Caton-Thompson pictures African natives piling up the great cone-shaped towers, the courts and stairways, and the mazes of thick stone walls. This is difficult to imagine, in view of the Bantu tribesmen today. It means that centuries ago these people rose to a height of ambition or fear or civic intelligence when they put forth great organized efforts and made for themselves this stronghold and sanctuary. The walls in places are sixteen feet thick.

Explaining her finding that everything about Zimbabwe seems to be African Bantu, Miss Caton-Thompson states, in a report to *Nature*:

"My respect for, and interest in, the Rhodesian ruins is enormously strengthened by these conclusions. Instead of a degenerate offshoot of a higher Oriental civilization, we have a vigorous native culture showing high organization, originality, and industry. It is a subject worthy of all the research South Africa can give to it. South African students must be bred to pursue it."

The age of South Africa's great building venture is now set to be not older than 600 A. D. and probably some centuries later.

Science News Letter, December 6, 1930

CONSERVATION

Suggest Paying Farmers For Raising Game

MAKE landowners really interested in the conservation and increase of game birds and animals by paying for the labor and materials used in their care.

That is the core of a new game policy advocated by a committee of the Seventeenth Annual American Game Conference, which met in New York this week.

The policy of protecting and colonizing game on lands unsuitable for farming or other commercial uses is admirable so far as it goes, but this policy is good only for this class of cheap lands, it was pointed out. High-priced farm and commercial forest lands are necessarily too much subjected to human management to permit game development under natural conditions. It is not fair, the committee stated, to expect the owners to divert part of the land use, and therefore potential revenue, to game raising unless a corresponding compensation is made to them.

This policy is now being tried out on an experimental large-scale basis in one county in Michigan, and is said to have given good satisfaction there.

Science News Letter, December 6, 1930

BACTERIOLOGY

Alfalfa Root Bacteria Supply Own Transportation

THE nodule bacteria of alfalfa roots, capturers of air nitrogen and builders of soil fertility, are active wanderers during their younger days, before they settle down to their life work. Bacteriologists at the great Rothamstead Experimental Station near London have taken advantage of this microbiotic wanderlust to secure better infection of alfalfa seed before planting.

The bacteria go through a series of life stages much like those of some aquatic animals, being free swimmers while they are young and sessile when they mature. When they grow old their cell contents assume a banded appearance, then break up into tiny globular bodies. These latter elongate into rodlets which at first have the power of motion. By encouraging these swarming youthful wanderers with a diet of milk and phosphates, it is possible to secure a much better inoculation of alfalfa seed.

Science News Letter, December 6, 1930

CHEMISTRY

Discovering Metals In The Alkaline Earths

"A Classic of Science"

Revealing the True Nature of Lime and Its Relatives

ELECTRO-CHEMICAL RESEARCHES, ON THE DECOMPOSITION OF THE EARTHS; WITH OBSERVATIONS ON THE METALS OBTAINED FROM THE ALKALINE EARTHS, AND ON THE AMALGAM PROCURED FROM AMMONIA. By Humphry Davy. From Philosophical Transactions of the Royal Society. Read June 30th, 1808.

Attempts to procure the Metals of the alkaline Earths; and on their Properties

To procure quantities of amalgam sufficient for distillation, I combined the methods I had before employed, with those of MM. Berzelius and Pontin.

The earths were slightly moistened, and mixed with one-third of red oxide of mercury, the mixture was placed on a plate of platina, a cavity was made in the upper part of it to receive a globule of mercury, of from 50 to 60 grains in weight, the whole was covered by a film of naphtha, and the plate was made positive, and the mercury negative, by a proper communication with the battery of five hundred.

The amalgams obtained in this way, were distilled in tubes of plate glass, or in some cases in tubes of common glass. These tubes were bent in the middle, and the extremities were enlarged, and rendered globular by blowing, so as to serve the purposes of a retort and receiver.

The tube after the amalgam had been introduced, was filled with naphtha, which was afterwards expelled by boiling, through a small orifice in the end corresponding to the receiver, which was hermetically sealed when the tube contained nothing but the vapour of naphtha, and the amalgam.

In the best result that I obtained from the distillation of the amalgam of barytes, the residuum appeared as a white metal of the colour of silver. It was fixed at all common temperatures, but became fluid at a heat below red-

ness, and did not rise in vapour when heated to redness, in a tube of plate glass, but acted violently upon the glass, producing a black mass, which seemed to contain barytes, and a fixed alkaline basis, in the first degree of oxygenation.

When exposed to air, it rapidly tarnished, and fell into a white powder, which was barytes. When this process was conducted in a small portion of air, the oxygen was found absorbed, and the nitrogen unaltered; when a portion of it was introduced into water, it acted upon it with great violence and sunk to the bottom, producing in it barytes; and hydrogen was generated. The quantities in which I obtained it were too minute for me to be able to examine correctly, either its physical or chemical properties. It sunk rapidly in water, and even in sulphuric acid, though surrounded by globules of hydrogen, equal to two or three times its volume; from which it seems probable, that it cannot be less than four or five times as heavy as water. It flattened by pressure, but required a considerable force for this effect.

The metal from strontites sunk in sulphuric acid, and exhibited the same characters as that from barytes, except in producing strontites by oxydation.

The metal from lime, I have never been able to examine exposed to air or under naphtha. In the case in which I was able to distil the quicksilver from it to the greatest extent, the tube unfortunately broke, whilst warm, and at the moment that the air entered, the metal, which had the colour and lustre of silver, instantly took fire, and burnt with an intense white light into quicklime.

The metal from magnesia seemed to act upon the glass, even before the whole of the quicksilver was distilled from it. In an experiment in which I stopped the process before the mercury was entirely driven off, it appeared as a solid, having the same whiteness and lustre as the other metals of the

earths. It sunk rapidly in water, though surrounded by globules of gas, producing magnesia, and quickly changed in air, becoming covered with a white crust, and falling into a fine powder, which proved to be magnesia.

In several cases in which amalgams of the metals of the earths, containing only a small quantity of mercury were obtained, I exposed them to air on a delicate balance, and always found that during the conversion of metal into earth, there was a considerable increase of weight.

I endeavored to ascertain the proportions of oxygen, and bases, in barytes and strontites, by heating amalgams of them in tubes filled with oxygen, but without success. I satisfied myself, however, that when the metals of the earths were burned in a small quantity of air they absorbed oxygen, gained weight in the process, and were in the highly caustic or unslaked state; for they produced strong heat by the contact of water, and did not effervesce during their solution in acids.

The evidence for the composition of the alkaline earths is then of the same kind as that for the composition of the common metallic oxides; and the principles of their decomposition are precisely similar, the inflammable matters in all cases separating at the negative surface in the Voltaic circuit, and the oxygen at the positive surface.

These new substances will demand names; and on the same principles as I have named the bases of the fixed alkalies, potassium and sodium, I shall venture to denominate the metals from the alkaline earths barium, strontium, calcium, and magnesium; the last of these words is undoubtedly objectionable, but magnesium has been already applied to metallic manganese, and would consequently have been an equivocal term.

Science News Letter, December 6, 1930

The Living World Of A Past Age

preserved in the trap which entombed it emerges before man in next week's Classic of Science by

Dr. John C. Merriam

who excavated and interpreted the remains of prehistoric animals embedded in the asphalt pool of

Rancho La Brea



LOOKING DOWN

A 100 per cent grade. The Royal Gorge incline railway near Canyon City, Col. It is 1,525 feet long and is said to be the steepest outdoor passenger incline railway in the world. Last month it began carrying passengers from the brink of the Royal Gorge Canyon to the Arkansas river about 1,000 feet below.

ENGINEERING

Engineers Camouflage Arlington Bridge Draw

ENGINEERS put a span in the Arlington Memorial bridge and then hid it. So cleverly designed and camouflaged is the million dollar, double bascule draw of the Arlington bridge which is nearing completion here that it is difficult for one to tell the span made of steel that parts in the middle and rises to allow ships to pass, from the eight other graceful arches made of concrete and faced with Georgia's Stone Mountain granite.

The erection of such a bridge of monumental pretensions with a bascule draw span that harmonizes with the rest of the structure and does not detract from its beauty is thought by engineers to be unprecedented in bridge building.

The picture on the front cover presents an unusual view of the Washington leaf of the span. The floor of the huge raised leaf is approximately 103 feet long and 90 feet wide. It is balanced by about 2,440 tons of counterweights.

Science News Letter, December 6, 1930

ROETGENOLOGY

X-Rays Can Detect Disease In Many Parts of Body

PEOPLE generally do not yet know how valuable the X-ray is in detecting disease of almost any part of the body in its early stages, when the chance of cure is greatest, said Dr. Joseph Colt Bloodgood of Johns Hopkins University at the meeting in Los Angeles this week of the Radiological Society of North America. At the present time there is no cure or management of cancer, except surgical removal with or without irradiation, or irradiation alone, he said. Cancer, however, is not the only disease in which X-rays have proved their usefulness. Dr. Bloodgood pointed out other conditions for which they are valuable.

"The moment there is any change in a bone, either of bone formation or bone destruction, it will show in an X-ray plate," he said.

"Everyone should know that a root abscess may be present in a tooth without pain or swelling. There may be

no gum boil or looseness of the tooth. The blood poisoning from that root abscess may cause rheumatism, indigestion, heart disease and many other troubles. It is good protection to have X-rays taken of your teeth at as frequent intervals as your dentist suggests."

Dr. Bloodgood also explained the value of X-rays in making early diagnoses of tuberculosis, gall bladder and kidney disease, cancer of stomach or intestines as well as cancer in more accessible parts of the body.

X-rays can find early signs of tuberculosis of the lungs, even before the victim appears to be ill, Dr. Karl E. Koenig of Seattle said. This is particularly important in detecting tuberculosis in children.

"Medical authorities know that tuberculosis of the lungs may be present for months and even years before there are definite symptoms," Dr. Koenig explained.

Science News Letter, December 6, 1930

Just published!

An introductory botany for high schools, academies, junior colleges and colleges

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by CHARLES JOSEPH CHAMBERLAIN
Professor of Botany, The University of Chicago

THIS textbook covers the fundamentals of botany, in a treatment basic and thorough enough to serve as a beginning for more specialized study, yet with a general undertone adapted to the needs of the lay or student reader who requires only enough botany for a cultural appreciation of plant life and its functions.

The book is in two parts which can be used separately or consecutively. Part I deals with the leaf, stem, root, flower, fruit and seed of flowering plants; Part II presents the development of the plant kingdom from the lowest forms up to the highest.

- laboratory work is included to give the student the thorough understanding of the subject that can be gained only from a study of the plants themselves.
- many accurate illustrations have been drawn especially for this book by the author.
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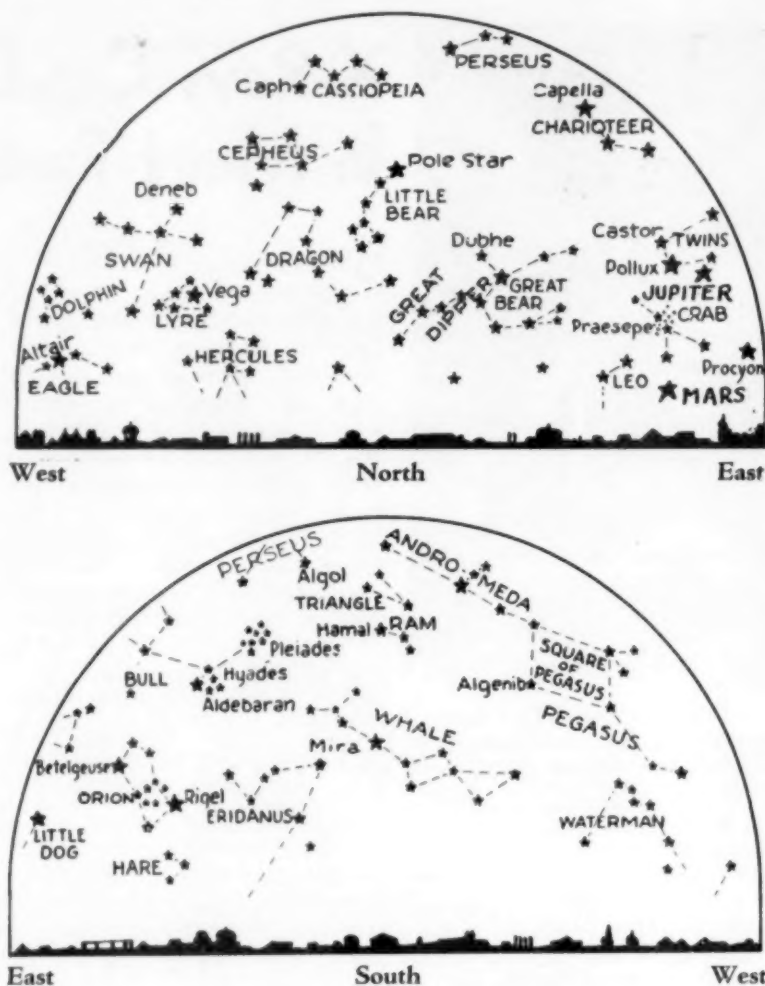
Official Position.....SNL 12-6-30.

Yardstick Of The Solar System

(Concluded from Page 359)

nence, two of the major planets are now decorating the evening sky. Look to the eastern sky this evening. High above is Capella, in Auriga, the charioteer. Below him the two stars Castor and Pollux, mark the twins, Gemini. Pollux is the lower and brighter, Castor is just above it. Almost directly east is Procyon, in Canis Minor, the little dog. These are all stars, with the typical scintillating light. But near the twins, in the direction towards Procyon, is a much brighter object of steady brilliance. This is the planet Jupiter. Below it, and a little to the north, is another planet, identified by its steady red light, though it is not as brilliant as Jupiter. This is Mars. Earlier in the evening, if you look to the southwest just after sunset, you will see Saturn, near the horizon in the gathering dusk. And about the twentieth of the month, for a few days before and after, Mercury will be nearby. But both of these planets are now so near the sun that they will be rather difficult to locate.

Nine first magnitude stars are now visible in the evening, all of which are shown on the semi-circular maps. Ca-



THE HEAVENS IN DECEMBER

March's Thesaurus Dictionary

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pella, high in the east, has already been mentioned. In the southeast is the famous group of Orion, the heavenly warrior, with the three stars in a row marking his belt. The bright star above the belt is Betelgeuse, the one below is Rigel. Low in the east is Procyon, in the little dog, Canis Minor. Sirius, the dog star, in Canis Major, the large dog, is just below the horizon as shown in the maps, and is visible in the southeast a little later in the evening. It is the brightest of all the stars. Aldebaran, red in color, marks the eye of the Bull, Taurus, high in the southeast, above Orion. Pollux, the brighter of the two twins, Gemini, has also been mentioned. It is in the eastern sky. In the west, now standing upright, is the northern cross, Cygnus, the swan, with Deneb at the top. Below it is Vega, in Lyra, the lyre, and still lower, near the horizon, is Altair, of Aquila, the eagle.

During December the moon is full on the fifth, when it rises in the east as the sun sets in the west. On the

twelfth it is in last quarter. Then it rises at midnight. On the nineteenth it is new, directly in line with the sun, and a few nights afterwards will appear as a narrow crescent in the western sky. It reaches first quarter on the twenty-seventh. Then it is directly south at sunset, and around this time is conspicuous all evening.

Science News Letter, December 6, 1930

Hopes of more caracul coats from American sheep are contained in the annual report of the Bureau of Animal Industry of the U. S. Department of Agriculture.

There are only a few Karakul flocks in this country but recent investigation by the bureau indicate that satisfactory pelts may be obtained by grading up Corriedale and Blackfaced Highland ewes with purebred Karakul rams. This discovery is good news for the women folk with whom caracul is a favorite fur.

EMBRYOLOGY

**"Good Egg" Compliment
To Be Taken Literally**

IF YOU call a man a "good egg" the compliment is to be taken literally. He probably did start out in life as a better-than-average egg cell, and has kept this advantage throughout his development.

This was among the points developed by Dr. George L. Streeter, director of the department of embryology of the Carnegie Institution of Washington, in a lecture delivered in that city. The exhaustive studies on mammalian ova conducted by his department have shown that these first cells in the development of the body are of very uneven quality. Many ova get started but never reach birth. Others are responsible for puny infants that die off during the crucial first year.

"If we reach the fifty to sixty years figured on by insurance actuaries, we can count ourselves as average eggs," said Dr. Streeter. "And if a man attains fourscore, we can regard him as an extraordinarily good egg."

In Dr. Streeter's laboratory the difficult task of finding and studying the eggs of various mammals has been conducted with more success than it ever has been elsewhere, and many facts about the earliest stages in the development of the higher animals and man which have hitherto had to be inferred from the embryology of non-mammalian animals are now being ascertained by direct study.

The eggs of such animals as rabbits, mice, guinea pigs, cats and hogs have been obtained in considerable numbers; and two weeks ago the researchers succeeded in finding for the first time the living dividing egg of a monkey consisting of 12 cells. As yet, however, no human stage younger than about eleven days has been found. At this stage the embryo already contains some hundreds of cells and has made a considerable advance in its development.

A powerful weapon in this research has been the motion picture camera. Focussed through a high-power microscope and taking its exposures at the slow rate of six a minute, the camera has produced a film that condenses hours of development into minutes of projection, enabling the scientists to study changes that in nature proceed so slowly that they would not be seen by direct observation.

Science News Letter, December 6, 1930

At \$1.00 Per Solve

INASMUCH as

Christmas giving is inevitable, persons of discrimination endeavor to make gifts which are at once an appeal to good taste and of genuine value—at once aesthetic and utilitarian. Any good book has that excellent balance. And if books, why not books just a bit out of the ordinary? Expensive? Certainly not. Here is a selection which will enable you to solve several Christmas problems "at \$1.00 per solve."

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By RALPH V.D. MAGOFFIN. A swift view of a most fascinating science—its charm, its excitement, its marvelous funds, its remaking of history, its methods and technique. Published December 1.

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VOLCANOLOGY

Kilauea Eruption Builds Fantastic Lava Structures

By PROF. T. A. JAGGAR, Volcanologist of the U. S. Geological Survey and observer at the rim of Kilauea.

VOLCANO House, Hawaii, (By Cable).—Black satiny surfaces and festooned skins of lava on a boiling lake of liquid stone, are the latest phases in the eruption of Kilauea's inner pit.

The first manifestation of activity in the present eruption was the outbreak of a number of lava fountains through last year's lava floor in the pit. These rapidly filled the bottom area with new lava activity, which finally centered at a single fountain with a lake northwest of it. The material was brown pumice and sulfur gases, with spurts 200 feet high. Occasionally the flows across the floor developed both smooth and clinker lava phases.

The lake built up its border until it stood on top of a slag heap more than 100 feet high, with larger flows con-

tinually moving down two long slopes on the side farthest away from the source fountain.

The fountain built up a half-ring of rampart wall of spattered lava, to the south of itself. This rampart kept breaking down on the side toward the fountain. The fountain continues its flow unceasingly and with undiminished strength.

The present surface of the lake is about 950 feet below the rim of the pit. A new lava field, 2,000 feet across and shaped like a leaf, has been formed. The eruptions continue with an unceasing inflow of lava.

Science News Letter, December 6, 1930

PSYCHOLOGY

Tells What Blind People See in Their Dreams

WHETHER or not blind people see in their dreams, that is whether they see forms and colors in their dreams, or only hear sounds and feel things, depends largely on the age at which they lost their eyesight, is the opinion of Dr. L. Webster Fox, professor of ophthalmology at the Graduate School of Medicine, University of Pennsylvania.

Looking back over a period of some forty years, when he first became interested in the subject, Dr. Fox finds that his initial conclusions on this interesting subject still hold. It was found that people who lost their sight after about the fifth year of their age had dreams little different from normal persons, for it was still possible for the sight center to maintain its function in dreams. Those blind from early childhood, or birth, however, did not "see" in their dreams.

Those blind from early infancy depend upon the senses of touch and hearing, and it is interesting to note that these individuals seem to talk with those who have part in their dreams, and that they distinguish voices.

Science News Letter, December 6, 1930

Old carbon paper can be rejuvenated three or four times by passing over an electrically heated cylinder.

ZOOLOGY

Nature Ramblings

By FRANK THONE



Grizzly

"THE grim, taciturn bear, the anchorite monk of the desert."

So Longfellow, in "Evangeline," termed the grizzly bear. And it was a good natural history note, too. Unlike the rather neighborly, really somewhat friendly black bear, the grizzly is a shy, aloof, gruff fellow, who wants no companionship, not even that of his own truculent species. When he comes upon a find of food in the wild, whoever else may be there stands not upon the order of his going, but goes at once. Else, sledgehammer cuffs and berserk clawings.

The grizzly is distinguished from the black bear group not only by his much greater size and his iron-gray, sometimes silver-gray, fur but by a noticeable difference in form. The black bear's shoulders are not appreciably higher than his hind-quarters, but the grizzly always has a pronounced hump. His body builds up to a powerful pyramid of muscles where his neck and forelimbs join on his back.

Once numerous throughout the West, the grizzly has now been pushed nearly to extinction. Only a few hundred specimens survive, and these are mostly protected "show" bears in national parks and forests.

In spite of his morose disposition, however, the grizzly seldom troubles human beings, and there is scarcely a clear case on recent record of his having taken the aggressive unprovoked. At the Yellowstone "bear-dumps" there are always rangers on guard with high-power rifles, but to date they have never had to fire them in defense of tourist spectators. The bears are content to feed and go their unfriendly way.

Science News Letter, December 6, 1930



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INDUSTRIAL SAFETY

**Movies of Accidents
Drive Safety Lessons Home**

INDUSTRY has found a way to drive safety lessons home. It is using the visual method, motion pictures projected from the small size 16 millimeter film.

"A film showing how the accident happened and perhaps a close-up of the mangled and mutilated hand, though unpleasant, will prove a stimulus to caution in the future," Maynard L. Sandell, of the Eastman Kodak Co., Rochester, N. Y., told members of the American Society of Mechanical Engineers at their annual meeting in New York this week. Mr. Sandell presented a paper which outlined the uses to which 16 mm. movies are being put in industry.

Slow motion movies are used to analyze movements made by employees so their efficiency may be increased. Processes may be described with movies more exactly than by either the spoken or written word. An aviator uses a 16 mm. camera mounted on the top of the wing of his plane to "see" the action of the elevators and rudder while under stress in flight.

Science News Letter, December 6, 1930

METEOROLOGY

**Cold Weather Not Brought
By Warm Summer**

LAST summer's record-breaking heat and drought have nothing to do with the unusually cold weather that has swept from west to east across the United States, U. S. Weather Bureau officials state.

During the throes of the surplus heat of the 1930 summer, old-fashioned weather prophets began predicting a long hard winter on the basis of the old theory that hot summers precede cold winters and vice versa. Uncle Sam's meteorologists emphatically deny the accuracy of such predictions.

Winters can only be average, colder than average, or warmer than average. That gives the long range weather forecaster but three guesses and makes it probable that he will guess correctly once in a while.

But even at this date it is impossible to predict with certainty whether the winter weather which is beginning so threateningly will be unusually cold or is merely blustering at the start.

Science News Letter, December 6, 1930

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• First Glances at New Books

Aeronautics

AN HOUR OF AVIATION—Capt. Norman Macmillan—*Lippincott*, 158 p., \$1. All phases of aviation are covered in this little book by a British authority. In his consideration of the military uses of aviation he says: "The dawn of the next big, white man's war will be a blood-red dawn. Death will be painted everywhere. Blood will flow, houses rotter, flames leap upward from burst gas mains, from underground petrol tanks, torn sewers will foul the air with poison dealing odours. The nations with the biggest cities will be the nations most easily to be conquered. The populations of the towns will overrun the country. There will be famine, starvation, disease. It will not be war. It will be assassination, butchery, bloody and unchecked. It will come so fast that retreat will be impossible."

Science News Letter, December 6, 1930

Chemistry

GENERAL CHEMISTRY FOR COLLEGES—B. Smith Hopkins—*Heath*, 767 p., \$3.72. Dr. Hopkins combines prominence as a research chemist (among other things, he was the co-discoverer of illinium) with a wide reputation as a teacher. In this book both sides of his nature are reflected, for it is an excellent text for teaching purposes and of a most authoritative character. The substance of the book was used at Illinois for several years in mimeographed form, which has removed in advance of publication some of the rough spots that might otherwise mar a good text.

Science News Letter, December 6, 1930

Medical History

EDWARD JENNER AND THE DISCOVERY OF SMALLPOX VACCINATION—Louis H. Roddis—*Banta*, 155 p., \$1. An account of Jenner's life and of the efforts to find a means of protection against smallpox. The book has a bibliography, a chronology of Jenner's life, a list of his published works and an appendix of interesting material on smallpox vaccination in various countries.

Science News Letter, December 6, 1930

Archaeology

THE ANALYSIS OF THE MAYA HIEROGLYPHS—Hermann Beyer—*E. J. Brill, Leyden*, 20 p. The usual method of attempting to read Maya hieroglyphs by trying to find resemblances between the symbols and objects in the Mayan world

is pronounced faulty by the author of this study. Analysis of the glyphs provides no magic key to the Mayan system, he warns, but it does make clear the original meaning of many signs. For this preliminary publication, he has selected nine fundamental glyphs which are heads of families, and he shows how each of these glyphs was used as a starting point for many variations, compounds, and deviations.

Science News Letter, December 6, 1930

History

THE GREAT CRUSADE AND AFTER—Preston William Slosson—*Macmillan*, 496 p., \$5. The recent history of our country, from 1914, has been perhaps the most momentous since the Civil War, and we cannot help but wonder what future historians will think of it. Of course, probably no one who has lived through it can form an entirely impartial judgment, but in this book Professor Slosson, of the history faculty of the University of Michigan, seems to have come pretty close to doing so. As indicated by the chapter headings, he covers such phases as America in war time, the experiment of prohibition, the winning of equality by the American woman, the saga of the motor car and journalism and advertisement. Of particular interest to readers of the *SCIENCE NEWS LETTER* will be the chapter "Science, Mistress and Handmaid," showing the influence of scientific development in shaping the period. This chapter was written by the author's father, the late Dr. Edwin E. Slosson, first director of Science Service, and represents one of the last things he wrote before his death last fall.

Science News Letter, December 6, 1930

Ichthyology

THE FISHES OF CHAMPAIGN COUNTY—D. H. Thompson and F. D. Hunt—*Illinois Natural History Survey*, 101 p. A study of the distribution and abundance of fishes in small streams in a typical prairie area.

Science News Letter, December 6, 1930

Economics

THE COST OF LIVING IN THE UNITED STATES 1914-1929—*National Industrial Conference Board, Inc.*, 190 p., \$3. Fundamental statistical matter of economic importance to all of us is analyzed in this study of the National Industrial Conference Board.

Science News Letter, December 6, 1930

Physics

ARTIFICIAL SUNLIGHT—M. Luckiesh—*Van Nostrand*, 254 p., \$3.75. From the time the cave man first used a burning faggot to ameliorate the darkness of night, to the last few years, this has been practically the sole purpose of illumination. But in recent years, with the discovery of the importance of the invisible rays of sunlight, and the knowledge of their frequent natural deficiency, there has been inaugurated a new era of lighting, one in which the health-giving properties of sunlight are reproduced as well as the purely luminous ones. Dr. Luckiesh, director of the General Electric Company's Lighting Research Laboratory, has here produced a book covering this new aspect of illumination. Rather naturally, he gives considerable attention to the tungsten-mercury sunlamp, developed by his company, but the general phases of the subject are also well covered.

Science News Letter, December 6, 1930

Astronomy

LA PLANÈTE MARS: 1659-1929—E. M. Antoniadi—*Hermann*, 239 p., 80 frs. Perhaps the leading of the European planetary observers is M. Antoniadi, astronomer at the observatory of Meudon, near Paris, and now a branch of the Observatoire de Paris. For many years he has observed Mars, and the other planets, with the great 32-inch refractor, the largest in Europe. In this work he presents not only his own researches, illustrated with many of his beautiful drawings, but also the history of the planet from the first telescopic observations by Huyghens in 1659 down to the present. A new map of Mars, based on his own observations, is given in four full page plates. He does not mention the alleged inhabitants of Mars, and his opinion of the canals is summed up in the title of one of the chapters, "L'illusion de Canaux." "Personne n'a jamais vu un véritable canal sur Mars," he declares, and suggests that the apparent markings are made up of smaller details, indistinctly seen.

Science News Letter, December 6, 1930

Geometry

SOLID GEOMETRY—J. O. Hassler—*Lyons & Carnahan*, 131 p., \$1. A condensed text of solid geometry for high school use.

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